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DAVIS & BUJOLD, PLLC

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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Detlef BAASCH, Christoph PELCHEN,
Barbara SCHMOHL and Unal GAZYAKAN
Serial no. : 10/524,796
Filed : with an effective filing date of August 18, 2003
For : METHOD FOR CONTROLLING THE DRIVE
TRAIN OF A VEHICLE
Group Art Unit : 3681
Examiner : Justin K. HOLMES
Docket : ZAHFRI P713US

The Commissioner for Patents
U.S. Patent & Trademark Office
P. O. Box 1450
Alexandria, VA 22311-1450

REQUEST FOR REFUND

Dear Sir:

The deposit account of the undersigned (Deposit Account No. 04-0213) was charged \$200 as fee code 1201 on June 8, 2007 as PTO Control No. 1, see attached copy thereof, for alleged fee deficiencies relating to the above-referenced application, namely, one (1) independent claim in excess of three (3) independent claims. It is believed that this charge to our deposit account is in error for the following reason.

In the Response mailed on May 15, 2007, new claims 19-21 were entered but, as a result of such amendment, this application still only contains three (3) independent claims, namely, claims 10, 19 and 20, as witnessed per attached copy of the May 15, 2007 Response. Consequently, it is submitted that this charge to our deposit account is in error and a refund, in the form of a check refunding the charged amount and payable to the office of the undersigned, should be issued by the Patent Office. In the event that the Patent Office disagrees with the above, it is respectfully requested that the Patent Office forward to the undersigned a formal explanation of why a refund is not proper in this instance.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,


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(to be used for all correspondence after initial filing)

Application Number	10/524,798
Filing Date	with an effective filing date of August 18, 2003
First Named Inventor	Detlef BAASCH, Christoph PELCHEN, Barbara SCHMOHL and Unal GAZYAK
Group Art Unit	3681
Examiner Name	Justin K. HOLMES Fax: (871) 273-8300
Attorney Docket Number	ZAHFRI P713US

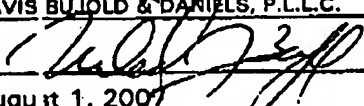
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Copy of response-10 pgs. |
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REMARKS

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual Name	Michael J. Bujold DAVIS BUJOLD & DANIELS, P.L.L.C.	Reg. No. 32,018 CUSTOMER NO. 020210
Signature		
Date	August 1, 2007	

CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted to the USPTO on August 1, 2007

Type or printed name	Michael J. Bujold
Signature	
Date:	August 1, 2007 (aag)

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PATENT APPLICATION

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RESPONSE

Dear Sir:

The Applicant hereby petitions for a 3-month Extension of Term attached hereto,
thereby extending the term for response to and including May 15, 2007.

[XXX] A CHECK FOR THE FEES INDICATED BELOW, BASED UPON THE APPLICANT'S LARGE ENTITY STATUS, ACCOMPANIES THIS RESPONSE.	
PETITION FOR 3 MONTH EXTENSION OF TIME	\$1,020
TOTAL	\$1,020

In response to the official action mailed November 15, 2006, please enter the following
before reconsideration of this application.

In the Claims:

Please amend claims 10-18 add new claims 19-21 and cancel claim 12 as follows in
which the claim additions are shown by underlining and/or the claim deletions are shown by
strikeout or brackets. Please enter the amended claims into the record of this case.

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1-9 (CANCELLED)

10. (CURRENTLY AMENDED) A method for the control of a drive train (1) of a vehicle, ~~especially an all-terrain vehicle, said vehicle being~~ equipped with a motor (2), a multi-group transmission (4), an output means, and a control apparatus, the multi-group transmission (4) comprising at least one automatic transmission (8) and a subsequently connected range group (9), and whereby, upon a change of ratio in the range group (9) the drive train (1) is relieved of ~~function load~~ by means of a change of a torque (m_{mot}) of the motor 2;

~~closing~~ a closable shifting element (24, 25) of the range group is closed;
~~synchronizing and opening~~ an openable shifting element (24, 25) of the range group (9) is ~~synchronized and opened~~; and

~~changing~~ a ratio of the automatic transmission (8) is changed in such a manner, that a change in ratio of the multi-group transmission (4) is less than that of an unassisted change of ratio of the range group (9); ~~and~~

~~achieved is adjusting~~ a speed of rotation (n_{mot}) of the motor (2) by means of a change of ~~changing~~ a power transfer capability of at least one shifting element of the automatic transmission (8) to one of equivalent ~~a~~ connective speed[s] of rotation (n_{mot-a}) equivalent to the ~~ratio[s]~~ of the multi-group transmission (4) at which the closable shifting element (24, 25) of the range group (9) is synchronized.

11. (CURRENTLY AMENDED) The method according to claim 10, ~~further comprising the step of satisfying~~ wherein a demand of a driver (m_{mot-1}) for changing the torque (m_{mot}) of the motor (2) during the changing of the ratio of the range group (9) can only be carried out upon conclusion of the ratio changing, whereby ~~the control apparatus institutes~~ a change of the motor torque (m_{mot}) of the driving machine (2) to relieve the drive train (1) ~~load from the control apparatus is activated by control~~.

12. (CANCELED)

13. (CURRENTLY AMENDED) The method according to claim 10, ~~further comprising the step~~ wherein for establishment of connective speed of rotation (n_{mot-a}) of the motor (2) a capability of transfer from openable shifting elements of the automatic transmission (8) is reduced and a capability of transfer of closable shifting elements of the automatic transmission (8) is increased.

14. (CURRENTLY AMENDED) The method according to claim 10, ~~further comprising the step~~ wherein upon existence of a connective speed of rotation (n_{mot-a}) of the motor (2), a capability of transfer of the openable shifting elements of the automatic transmission (8) is cancelled, while the closable shifting elements of the automatic transmission (8) are held in a slipping state.

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15. (CURRENTLY AMENDED) The method according to claim 10, further comprising the step wherein the closable shifting elements of the automatic transmission (8) and the closable shifting element (24, 25) of the range group (9) are completely closed when in a synchronized condition.

16. (CURRENTLY AMENDED) The method according to claim 10, further comprising the step wherein the change of ratio of the range group (9) and an associated change of the ratio of the automatic transmission (8) is done automatically upon presence of a defined operational condition.

17. (CURRENTLY AMENDED) The method according to claim 10, further comprising the step wherein the change of ratio of the range group (9) and an associated change of ratio of the automatic transmission (8) is done by the expressed, optional action of a driver.

18. (CURRENTLY AMENDED) The method according to claim 10, further comprising the step wherein the control apparatus is composed of a motor torque control device, an automatic transmission control device, a range group control device, which, are communicatively bound to one another and exchange signals, or the automatic transmission control device and the range group control device are mutually combined to form a common control apparatus.

19. (NEW) A method for the control of a drive train (1) of a motor vehicle having including a motor (2), a multi-group transmission (4), an output shaft, and a control device, the multi-group transmission (4) comprising at least one automatic transmission (8) and a subsequently connected range group (9), the method comprising the steps of:

relieving the drivetrain (1) of a torque load during a change of ratio in the range group (9) by changing a torque output (m_{mot}) of the motor 2;
actuating a closable shifting element (24, 25) of the range group;
synchronizing and opening an openable shifting element (24, 25) of the range group (9);

adjusting a speed of rotation (n_{mot}) of the motor (2) by changing a power transfer capability of at least one shifting element of the automatic transmission (8) to a desired connective speed of rotation (n_{mot-a}) substantially equivalent to the ratio of the multi-group transmission (4) at which the closable shifting element (24, 25) of the range group (9) is synchronized; and

suppressing a driver demand (m_{mot-d}) for changing the torque (m_{mot}) of the motor (2) during the changing of the ratio of the range group (9) until conclusion of the

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range group (9) ratio change, whereupon the control device institutes a change of the motor torque (m_{mot}) of the driving machine (2).

20. (NEW) A method for the control of a drive train (1) of a motor vehicle having including a motor (2), a multi-group transmission (4), an output shaft, and a control device, the multi-group transmission (4) comprising at least one automatic transmission (8) and a subsequently connected range group (9), the method comprising the steps of:

- relieving the drivetrain (1) of a torque load during a change of ratio in the range group (9) by changing a torque output (m_{mot}) of the motor 2;
- actuating a closable shifting element (24, 25) of the range group;
- synchronizing and opening an openable shifting element (24, 25) of the range group (9); and

- adjusting a speed of rotation (n_{mot}) of the motor (2) by changing a power transfer capability of at least one shifting element of the automatic transmission (8) to a desired connective speed of rotation (n_{mote}) substantially equivalent to the ratio of the multi-group transmission (4) at which the closable shifting element (24, 25) of the range group (9) is synchronized;

21. (NEW) The method for the control of a drive train (1) of a motor vehicle as set forth in claim 20 further comprising the step of suppressing a driver demand (m_{mot}) for changing the torque (m_{mot}) of the motor (2) during the changing of the ratio of the range group (9) until conclusion of the range group (9) ratio change, whereupon the control device institutes a change of the motor torque (m_{mot}) of the driving machine (2).

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REMARKS

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Claims 10-16 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for the reasons noted in the official action. The rejected claims are accordingly amended, by the above claim amendments, and the presently pending claims are now believed to particularly point out and distinctly claim the subject matter regarded as the invention, thereby overcoming all of the raised § 112, second paragraph, rejections. The entered claim amendments are directed solely at overcoming the raised indefiniteness rejection(s) and are not directed at distinguishing the present invention from the art of record in this case.

The Applicant thanks the Examiner for indicating that claims 11 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claim(s). Although the claims as amended are believed allowable as discussed in the remarks below, in accordance with the Examiner's present indication of allowable subject matter, new independent claim 13 now includes substantially all the subject matter of claims 10 and 11, and is believed to be allowable.

Next, claims 10 and 13-18 are rejected, under 35 U.S.C. § 103(a), as being unpatentable over Baxter et al. '777 in view of Runde et al. '954. The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the above amendments and the following remarks.

As the Examiner is aware, in order to properly support a combination of references under 35 U.S.C. § 103(a) the cited references must provide some disclosure, teaching or suggestion which would lead one of skill in the art to combine the references and achieve the presently claimed invention. The Federal Circuit has traditionally upheld a standard of express disclosure, or inherent motivation or teaching to support an obviousness rejection. "The lesson of this case appears to be that prior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining the teachings." In re Semaker, 702 F.2d 989, 995-6, 217 USPQ 1, 6 (CAFC 1983).

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Recently, a U.S. supreme Court decision has potentially altered the breadth of the well established requirement to support obviousness in the references in the case of KSR v. Teleflex 550 S. Ct. No. 04-1350, however the Applicant notes that the Supreme Court has not overturned the Federal Circuit's case law. While the TSM (teaching, suggestion, motivation) test may be applied too rigidly at times by the Federal Circuit, as the U.S. Supreme Court noted in KSR v. Teleflex, 550 S. Ct. No. 04-1350 "...it can still be important to identify a reason the would have prompted a person of ordinary skill in the art to combine the elements as the new invention does." The Applicant's understanding is that a valid combination of references must at least be supported by rational comparison, similar teachings and to a great extent a functional and structural similarity.

In the present matter where the only apparent similarity is that both references relate to control methods for structurally and functionally different automatic transmissions, and where both control systems are focused on entirely different problems solved in each reference, it is the Applicant's position that the merely inherent and relative subject matter of such different problems and solutions does not rise to a level which would enable a supportable combination. More specifically Runde et al. '954 relates to skip-shifting and discusses the issue of controlling the transmission based on releasing the off-going clutch C3 and engaging the on-going clutch C5, and controlling the engine torque so that the transmission input speed reaches the target gear speed after some estimated period of time. A review of this reference reveals that this skip-shift control system has nothing to do with synchronizing the transmission with a differential via the respective engagement of a multi-group transmission and a main transmission (8) as in Baxter et al. '777 or the present invention. Baxter et al. '777 relates to a differential gear in a transfer case 25 of a four-wheel drive vehicle and does not discuss anything about skip-shifting of the transmission. Thus, the Applicant does not believe that such a combination is proper to support the obviousness rejection of the presently pending claims.

Even if the references can be combined, and absent some rational to combine, the Applicant adamantly opposes any such combination, each reference controls the engine via the ECU. In fact, if the references can be combined this engine control by the ECU as explained

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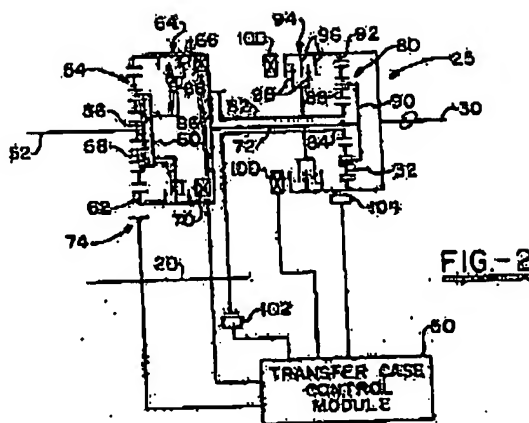
In each reference would merely be layered on top of one another to potentially facilitate skip-shifting as well as control the synchronization of the differential.

As shown in Fig. 2 of Baxter et al. '777, the transfer case 25 divides torque from the vehicle engine 28 and transmission unit 26 between the front output shaft 20, and the respective rear drive shaft 30.

Observing Fig. 2 of Baxter et al. '777 relative to the input shaft 52 a front clutch 64 in the differential provides a first predetermined gear ratio to shaft 72 when actuated, and when deactivated provides a second predetermined ratio to shaft 72. The shifting "on-the-fly" between a high and low gear ratios is provided by actuation of a shift means 74 as described in detail at col. 3 lines 17-53. A second clutch 94 is provided in the differential to divide torque between the front and rear drive wheels and is actuated upon detecting a predetermined difference in speed of the front and rear output shafts 20 and 30, i.e. to prevent slip between the front and rear output shafts 20 and 30 respectively.

As discussed in Baxter et al. '777 at cols. 4-5 and shown in Fig. 3, this on-the-fly transfer case shifting apparatus has a transfer case control module 50 which is coupled to an engine control module 110 for controlling the engine and transmission. The transfer case control module 50 determines from the engine control module 110 whether vehicle operation is within a range which will allow safe shifting between a high range and a low range. As noted in col. 5, lines 43-5:

If vehicle operation is not compatible with the selected drive range, the transfer case control module will control the engine fuel system via the engine control module 110 to therefore reduce the torque supplied to the input shaft 52 (shown in FIG. 2) of transfer case 25. Alternatively, or in conjunction with



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controlling the fuel system the transfer case algorithm 120 will generate an output signal on line 132 to shift the transmission gear ratio so as to match the transmission output speed to the transfer case output speed.

What is arguably shown by the reference is that the rotational speed of the engine is controlled by the control module to a point where the differential can shift between high and low torque states. This method, as known in the art and explained in the Applicant's specification in the Background of the invention at paragraphs 9-11, requires a certain amount of time, particularly where a large difference in rotational speeds leads to longer time period for equalization.

What is also not shown by this reference, not even the table illustrated at col. 7, is that in the presently claimed invention, when a driver, or a driver actions, cause a shift from high to low, or vice-versa in the range group, is that the rotational speed of the engine is adjusted by changing the power transmitting capacity of at least one shift element in the automatic transmission to a coupling speed which is equivalent to the targeted transmission ratio of the multi-group transmission and with which the range-change unit shift element to be engaged is synchronous.

In this regard, claim 10 has been amended to more clearly recite the novel step of "adjusting a speed of rotation (n_{mol}) of the motor (2) by changing a power transfer capability of at least one shifting element of the automatic transmission (8) to a connective speed of rotation (n_{mole}) equivalent to the ratio of the multi-group transmission (4) at which the closable shifting element (24, 25) of the range group (9) is synchronized."

The Examiner has combined Runde et al. '954 with the above discussed reference to support the obviousness rejection, however, Runde et al. '954 merely discloses an improved downshift or skip-shift control for automatic transmissions where both optimized sequential shifting and skip-down shifting are desired. Paragraphs 17-19 in Runde et al. '954 allegedly show that a number of clutches C1, C2, C3... can be controlled via valves 60, 62, 64 in a transmission 14 to accomplish engine control for example downshifting operations, however there is nothing which discloses or teaches the Applicant's claimed step of "adjusting a speed

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of rotation (n_{mot}) of the motor (2) by changing a power transfer capability of at least one shifting element of the automatic transmission (8) to a connective speed of rotation (n_{mote}) equivalent to the ratio of the multi-group transmission (4) at which the closable shifting element (24, 25) of the range group (9) is synchronized."

Paragraph 0021 of Runde et al. '954 in fact, just as in Baxter et al. '777, teaches using the ECU to control the engine speed. In regards to skip shifting Runde et al. '954 explains,

[I]n general, this involves a concurrent control of both engine torque and off-going clutch release. Releasing the off-going clutch C3 effectively shifts the transmission 14 to neutral, and the engine torque command controls the rate at which the transmission input speed TIS increases toward the synchronous speed of the target gear (1st). (Emphasis added)

Also, subsequent paragraph 0022 line 7 further explains the engine torque command, "The throttle setting THR abruptly increases at time T0, and produces a corresponding increase in engine output torque EOT." Therefore, even if these references can be combined, and the Applicant adamantly disputes any such proposition, such a combination still fails to teach, disclose or suggest in any manner the specifically recited steps and features of the present invention.

Similarly, new claim 20 includes the step of, "adjusting a speed of rotation (n_{mot}) of the motor (2) by changing a power transfer capability of at least one shifting element of the automatic transmission (8) to a desired connective speed of rotation (n_{mote}) substantially equivalent to the ratio of the multi-group transmission (4) at which the closable shifting element (24, 25) of the range group (9) is synchronized;" Again, as neither reference either alone or in combination discloses, suggests or teaches such a step, the Applicant believes claim 20 and dependent claim 21 to be allowable as well.

If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised obviousness rejections should be withdrawn at this time. If the Examiner disagrees with

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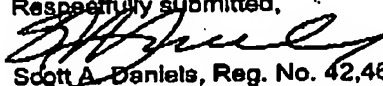
the Applicant's view concerning the withdrawal of the outstanding rejection(s) or applicability of the Baxter et al. '777 and Runda et al. '954 references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

In view of the foregoing, it is respectfully submitted that the raised rejections should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,


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